



National Aeronautics and Space Administration  
Office of Equal Opportunity Programs  
Minority University Research and Education Division

# **Tribal Colleges and Universities**

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## ***Native American Education Programs***

### ***FISCAL YEAR 1998 PERFORMANCE REPORT***

### ***FISCAL YEARS 1999-2000 PERFORMANCE PLAN***

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## EXECUTIVE SUMMARY

This document contains NASA's Federal Fiscal Year (FY) 1998 Performance Report and FY 1999-2000 Performance Plans in response to Executive Order (EO) 13021, *Tribal Colleges and Universities (TCU)*, signed on October 19, 1996, by President William J. Clinton. It includes all NASA projects that provide support to TCU's and their students, as well as an Appendix highlighting other NASA projects designed to increase educational opportunities for Native American students.

NASA's commitment to supporting TCU's and the mathematics, science, engineering, and technology education of Native American students dates back to the early 1990's. With EO 13021 now in place, NASA is renewing that commitment by focusing its efforts on the critical areas of technology and of science and mathematics, as defined by the TCU Presidents, and by seeking to double its direct annual funding to TCU's over the 5-year period from 1998 to 2003.

In FY 1998, NASA awards to TCU's totaled \$2.3 million, including \$1.1 million in direct awards to eight different TCU's and \$1.2 million in awards to TCU's through third parties and the private sector. These awards were primarily precollege education and teacher training projects carried out under competitive NASA programs for minority universities. One unique effort was a pilot project at Bay Mills Community College to develop curriculum units in renewable energy resources.

For FY 1999, the NASA Centers and the Jet Propulsion Laboratory (JPL) are projecting combined funding to TCU's of \$2.9 million and the same amount again in FY 2000. Particular attention will be paid to conducting outreach activities designed to increase the familiarity of TCU's with NASA, improving the NASA American Indian Science and Technology Education Consortium (AISTEC) Program support of TCU needs, and improving TCU participation in NASA precollege education and teacher training activities. Exploratory efforts will be made to improve NASA support of TCU computer and network technology resource needs and to involve TCU's in NASA technology transfer projects.

The NASA Office of Equal Opportunity Programs (OEOP), through its Minority University Research and Education Division (MURED), has the responsibility for oversight, policies, and major funding of NASA TCU programs. It is MURED's mission to meld support of TCU's with NASA's major mission responsibilities. To this end, the TCU projects reported herein represent partnerships that make use of NASA's mission themes, NASA-driven technologies, and/or NASA's continuing commitment to improving mathematics, science, engineering, and technology education.

## NASA OVERVIEW

This is the first formal report and plan on NASA activities in response to Executive Order (EO) 13021, signed on October 19, 1996, by President William J. Clinton, mandating increased Federal support for Tribal Colleges and Universities (TCU). The report and plan include all NASA projects that provide support to TCU's and their students, as well as an Appendix highlighting other NASA projects designed to increase educational opportunities for Native American students. NASA's support of TCU's is intimately intertwined with the overall NASA mission, with NASA's education programs, and with NASA's research and education programs for minority institutions of higher education. Therefore, to provide a coherent context for understanding NASA's TCU program, this report begins with an overview of the general history and goals of NASA's TCU program, the NASA mission and organization, and the NASA research and education programs that contribute to the support of TCU's. The specific details of NASA's FY 1998 Performance Report and FY 1999-2000 Plans for TCU's follow.

## TRIBAL COLLEGES AND UNIVERSITIES PROGRAM ---

The signing of Executive Order (EO) 13021 found NASA already making significant investments in TCU programs. Those investments began in the early 1990's, first with a summer institute at Navajo Community College (as Diné College was then known), followed shortly afterwards with precollege outreach and undergraduate student support projects at Northwest Indian College, Turtle Mountain Community College, and D-Q University. In 1994, NASA initiated the American Indian Science and Technology Education Consortium (AISTEC), a collaboration of six major universities and four Tribal Colleges aimed at improving the mathematics and science educational pipeline for Native American students. By FY 1997, the first year after EO 13021 was signed, the NASA TCU program had grown to an annual budget of \$1.8 million, including \$1.4 million in direct awards to eight different TCU's and \$0.4 million in awards to TCU's through third parties. In addition, NASA provided \$1.6 million in awards supporting the education of Native American students through institutions that were not TCU's. EO 13021 gave NASA an imperative to strengthen and focus its already vibrant TCU programs in order to improve the benefits to both TCU's and NASA.

George E. Reese, NASA's Associate Administrator for Equal Opportunity Programs, is the senior official responsible for implementing NASA's response to EO 13021. He has delegated to Ms. Bettie L. White, Director of the Minority University Research and Education Division (MURED), responsibility for providing Agencywide leadership and oversight of NASA TCU programs. Supporting Ms. White is Dr. Philip J. Sakimoto, University Programs Specialist for TCU's. It is MURED's mission to meld NASA support of TCU's with NASA's major mission responsibilities. To this end, all of the TCU projects reported

herein incorporate NASA's mission themes, make use of NASA-driven technologies, emphasize partnerships with NASA Centers and JPL, and/or support TCU efforts to strengthen and expand their institution's mathematics, science, engineering, and technology (MSET) educational opportunities. To place them in context, a brief overview of the NASA mission and organization follows.

## MISSION AND ORGANIZATION

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### Mission

NASA implements programs to achieve a three-part mission as follows:

1. Scientific Research to advance and communicate scientific knowledge and understanding of the Earth, the solar system, and the universe and use the environment of space for research;
2. Space Exploration to explore, use, and enable the development of space for human and robotic endeavors in science and commerce; and
3. Technology Development and Transfer to research, develop, verify, and transfer advanced aeronautics, space, and related technologies.

### Strategic Enterprises

The program definition necessary to carry out the overall NASA mission is accomplished through four Strategic Enterprises, each with its own focused mission:

- Space Science Enterprise: To solve mysteries of the universe, explore the solar system, discover planets around other stars, and search for life beyond Earth.
- Earth Science Enterprise: To understand the total Earth system and the effects of natural and human-induced changes on the global environment.
- Human Exploration and Development of Space (HEDS) Enterprise: To open the space frontier by exploring, using, and enabling the development of space to expand human experience into the far reaches of space.
- Aero-Space Technology Enterprise: To pioneer the identification, development, verification, transfer, application, and commercialization of high-payoff aeronautics and space transportation technologies.

### Cross-Cutting Processes

Activities that support all of the Enterprises are grouped into four cross-cutting processes:

- Manage Strategically: Provide policy, directions, and implementation guidelines.

- Provide Aerospace Products and Capabilities: Deliver systems (aeronautics, space, and ground), technologies, data, and operational services.
- Generate Knowledge: Provide new scientific and technological knowledge.
- Communicate Knowledge: increase understanding of science and technology, including fostering partnerships with educators and students.

It is through the latter cross-cutting process that much of NASA's educational activities are administered.

## Organization

### ***NASA Headquarters***

NASA Headquarters in Washington, DC, is the corporate headquarters, responsible for leadership and management across the Strategic Enterprises, development of program strategies, and interfacing with Congress and the White House. Within NASA Headquarters, five program offices have responsibility for the Enterprise missions:

- **Office of Space Science (OSS)**—lead responsibility for the Space Science Enterprise.
- **Office of Earth Science (OES)**—lead responsibility for the Earth Science Enterprise.
- **Office of Space Flight (OSF)**—lead responsibility for HEDS Enterprise.
- **Office of Life and Microgravity Sciences and Applications (OLMSA)**—responsible for science content of HEDS Enterprise.
- **Office of Aero-Space Technology (OAT)**—lead responsibility for Aero-Space Technology Enterprise.

Research and education activities, specific to a given NASA Enterprise, may arise from within any of the program offices.

Also within NASA Headquarters, functional/staff offices have responsibility for the cross-cutting functions that serve all of the Enterprises. The key functional/staff offices with major responsibilities for NASA's education and minority university programs that span all of the Enterprises are as follows:

- **Office of Human Resources and Education (OHRE)**—lead responsibility for Agency education programs.
- **Office of Equal Opportunity Programs (OEOP)**—lead responsibility for Agency minority university programs, including TCU programs.

Funding for TCU programs may originate from any of the offices listed above.

### ***NASA Centers and the Jet Propulsion Laboratory***

The NASA Centers and the Jet Propulsion Laboratory (JPL) are the primary sites from which the Enterprise missions are implemented. Each Center and

JPL have Agencywide leadership responsibility for a specific Center of Excellence area (shown in italics) along with other roles and responsibilities for the Strategic Enterprises as listed below.

- **Ames Research Center (ARC)**, Moffett Field, California—*Information Technology, Astrobiology, Aviation Operation Systems.*
- **Dryden Flight Research Center (DFRC)**, Edwards, California—*Atmospheric Flight Operations, Flight Research.*
- **Glenn Research Center (GRC) at Lewis Field**, Cleveland, Ohio—*Turbomachinery, Aeropropulsion.*
- **Goddard Space Flight Center (GSFC)**, Greenbelt, Maryland—*Scientific Research, Physics and Astronomy, Earth System Science.*
- **Jet Propulsion Laboratory (JPL)**, Pasadena, California—*Deep Space Systems, Planetary Science and Exploration, Instrument Technology.*
- **Johnson Space Center (JSC)**, Houston, Texas—*Human Operations in Space, Astro Materials.*
- **Kennedy Space Center (KSC)**, Florida—*Launch and Payload Processing Systems.*
- **Langley Research Center (LaRC)**, Hampton, Virginia—*Structures and Materials, Atmospheric Science, Airframe Systems.*
- **Marshall Space Flight Center (MSFC)**, Huntsville, Alabama—*Space Propulsion, Space Transportation Systems, Microgravity Research.*
- **Stennis Space Center (SSC)**, Mississippi—*Rocket Propulsion Testing, Commercial Remote Sensing.*

All NASA college and university awards are made as Federal Government grants, cooperative agreements, or contracts from one of the NASA Centers, or as subcontracts to the NASA contract that operates JPL as a Government-owned, contractor-operated facility.

Throughout the narratives in this report/plan, awards and projects are identified by the abbreviations given above for both the Headquarters Office from which the funding originated and the Center (or JPL) from which the award was made.

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## RESEARCH AND EDUCATION PROGRAMS

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NASA research and education programs span a wide variety of activities, each tailored to a specific purpose within the NASA mission. In this section, they are sorted according to the categories specified for reporting purposes by the White House Initiative Office on TCU's. Within each category, synopses of the NASA programs most relevant to TCU's are given.

## Research and Development

NASA conducts its primary research and development activities through Announcements of Opportunity (AO) for flight projects and NASA Research Announcements (NRA) for science and engineering research projects. The NASA Enterprises routinely release AO's and NRA's for which all categories of U.S. and non-U.S. organizations, including educational institutions, industry, nonprofit institutions, NASA Centers, and other Government agencies are eligible to propose.

To facilitate access for minority universities to NASA research activities, the Office of Equal Opportunity Programs offers four competitive solicitations which are open exclusively to minority universities:

- **University Research Center (URC) Awards** are major, multidisciplinary research units established at minority institutions, each focused on a specific area of NASA interest. The program goals are to achieve a broad-based, mainstream, competitive aerospace research capability among the Nation's Historically Black Colleges and Universities (HBCU) and Other Minority Universities (OMU) that will foster new aerospace science and technology concepts, expand the Nation's base for aerospace research and development, develop mechanisms for increased participation by faculty and students in mainstream research, and increase the productivity of students (who are U.S. citizens and who have historically been underrepresented) with advanced degrees in NASA-related fields.
- **Institutional Research Awards (IRA)** improve academic, scientific and technology infrastructure and broaden the NASA-related science and technology base at Minority Institutions (MI). Two awards with different focus areas have been made under this category. The IRA (Research) awards provide MI's with an opportunity to provide a quality learning and research environment in NASA-related areas. The IRA (Network Resources and Training Sites (NRTS)) award is designed to improve the in-house capability to electronically access science data and computational resources; to develop mechanisms to support, sustain, and evolve the network infrastructure of the targeted universities and colleges; and to make MI's more effective in the competitive process for NASA and other science, engineering, and technology funding opportunities.
- **Principal Investigator (PI) Awards** provide faculty with limited NASA experience an opportunity to integrate the research and education components of their careers with the unique mission requirements of a specific NASA Center or JPL. Each fiscal year, MI's are invited to submit proposals for the *Faculty Awards for Research (FAR)*. The FAR program provides for competitive, peer-review selection of outstanding and promising engineering, physical, and life-science-tenured and tenure-track faculty who are capable of contributing to the Agency's research and education objectives. This award provides faculty members with research support and exposure to the NASA peer-review process to enable them to demonstrate creativity, productivity, and future promise in the transition toward achieving competitive awards in the Agency's mainstream research processes.



- **Partnership Awards** strengthen the partnerships between minority institutions and NASA Strategic Enterprises, Centers and JPL, aerospace industry, and other education institutions, and they develop projects which are unique, are outside the OEOP norm, and have the likelihood of continued funding from other sources. Partnership Awards may be proposed in three different categories: research, education, or training. Awards in the research category are included in the Research and Development category of this report.

The OEOP PI Awards and Partnership Awards are the categories of research projects most easily accessible to TCU's.

## Direct Institutional Subsidies

NASA does not award direct institutional subsidies.

## Program Evaluation

For NASA Minority University Research and Education Programs (MUREP) awards, the following uniform outcomes data are collected annually from each grantee:

### Research Projects (URC's, IRA's, PI's, and Partnership (Research) Awards)

- Participants - students, faculty, postdoctoral researchers, research associates supported
- Student Outcomes - degrees awarded, postgraduation plans
- Research Outcomes – refereed papers, technical presentations, patents, commercial products, and research funds leveraged from other sources

### Education and Training Projects (Mathematics and Science Education and Partnership (Education) Awards)

- Participants - students, teachers supported
- High School Student Outcomes - enrollment in MSET courses, graduation, enrollment in college, and selection of MSET majors
- Bridge Student Outcomes - completed freshman year in college
- Undergraduate and Graduate Student Outcomes - degrees awarded, post-graduation plans
- Teacher Outcomes - received certification

In addition, an annual performance report and/or onsite or reverse-site reviews provide more detailed evaluations of each award.

## Training and Technical Assistance

NASA's training and technical assistance activities fall into two categories: educational outreach projects, and technical assistance to minority universities.

NASA's contribution to education is based on the Agency's inspiring mission, specialized workforce, close working relationship with the research and

development community, and unique world-class facilities. Based on these unique attributes, NASA has created a comprehensive Education Program, containing a portfolio of activities directed toward education at all levels, undertaken by the NASA Office of Human Resources and Education (OHRE), the Office of Equal Opportunity Programs (OEOP), the NASA Enterprises, and the NASA Centers. The OHRE has Agencywide responsibility for NASA's Education Program to establish policy, goals, objectives, and evaluation. The OEOP has responsibility for establishing policy, goals, objectives, and evaluation related to minority institutions of higher education and has established the following specific initiatives to engage minority universities in precollege and teacher training activities:

- **Precollege Awards** provide opportunities for MI's, in collaboration with NASA and local school districts, to provide informal educational opportunities that will enhance the numbers and percentage of students enrolled in mathematics and science college preparatory courses. As a result of participating in these awards, students will gain awareness of career opportunities in MSET fields and exposure to NASA's mission and scientific and technical personnel role models. Each fiscal year, MI's are invited to submit proposals for precollege awards under the *Precollege Awards for Excellence in Mathematics, Science, Engineering, and Technology (PACE/MSET) Program*.
- **Teacher Education Awards** provide opportunities for MI's to develop diverse and exemplary research-based mathematics, science, technology and geography teacher education curricula, integrated with content from NASA's mission. It is the Agency's desire that the results from these awards serve as models for other colleges and universities. Additionally, these awards will contribute to the participating States' efforts to increase the numbers and percentage of State-certified mathematics, science, technology or geography teachers employed in hard-to-staff elementary, middle, and secondary schools not normally served by NASA. Each fiscal year, MI's are invited to submit proposals for teacher preparation and enhancement awards under the *Minority University Mathematics, Science and Technology Awards for Teacher Education Program (MASTAP)*.
- **Partnership Awards** (see description under Research and Development) in the categories of education or training also provide opportunities for MI's to engage in precollege outreach, teacher preparation and enhancement activities, and in educational enhancement and training for undergraduate and graduate students. Additional opportunities are provided that integrate current and emerging research into MSET undergraduate curricula.

Technical assistance provided to minority universities includes workshops on specific NASA areas of interest, grant preparation, financial management, site visits to minority universities, and hosting minority university visitors at NASA Centers and JPL. Often, these activities involve only the use of NASA facilities and civil service travel and salary costs, which are provided as an in-kind service by the host NASA Center or JPL and, therefore, are not included in the summaries of NASA funding provided to TCU's. In some cases, NASA does make direct funding outlays through third-party vendors to facilitate major

activities that benefit TCU's. In those cases, the activity and funding is listed under third-party support for TCU's.

## Facilities and Equipment

NASA does not award grants specifically for Facilities and Equipment. A small portion of funding is normally permitted under a research or education grant to fund equipment required for support of research or education activities. In addition, to the degree that it is available from the NASA Centers, TCU's may be able to acquire excess or loaned equipment to support research efforts or scientific teaching.

## Fellowships, Internships, Recruitment, and IPA Arrangements

Of particular interest to TCU's is the Agencywide NASA Administrator's Fellowship Program, operated for NASA by the National Research Council (see description under Third-Party Awards).

In addition, each NASA Center and JPL offer a number of fellowship, internship, recruitment, and IPA opportunities, tailored to its own mission and employment needs.

## Student Tuition Aid, Scholarships, and Other Aid

The Agencywide scholarship program of most significant interest to TCU's is the Undergraduate Scholars Awards for Research (USAR), operated for NASA by the National Action Council for Minorities in Engineering (see description under Third-Party Awards).

Additional scholarship opportunities are offered by individual NASA Centers and JPL.

## Third-Party Awards

A number of NASA minority university programs are operated by third-party vendors. Such arrangements include the following:

- **National Action Council for Minorities in Engineering Undergraduate Scholars Awards for Research (USAR):** These awards provide support for undergraduate scholars in science, engineering, mathematics, or computer science at MI's selected for the program.
- **National Research Council, NASA Administrator's Fellowship Program (NAFP)** is designed to enhance the professional development of NASA employees and the science, mathematics, and engineering faculty of MI's. The program also aims at increasing the capability of MI's to respond to NASA's overall research and development mission. Under NAFP, NASA career employees teach and/or conduct research at an MI. Science, mathematics, or engineering faculty of minority-serving institutions conduct research at a NASA Center, another Government agency, a research university, or a private-sector organization.

- **The College Fund/United Negro College Fund (UNCF) Curriculum Improvement Partnership Award Program for Minority Universities and Colleges:** Through a cooperative agreement with UNCF and NASA, provides opportunities for colleges and universities to strengthen their curricula in academic fields and technical programs directly related to NASA's mission.

## **Private-Sector Involvement**

A peer-review support contract is currently held by the Allied Technology Group, Inc. The contractor's function includes the development of an Internet-based electronic management system to support solicitation development, peer review and selection, postaward evaluation, and grants/cooperative agreements management with MI's. Additionally, the contractor ensures that MI's are familiar with and capable of accessing NASA MURED programs online via an electronic management system to receive announcements of opportunity and to submit proposals, evaluations, and other postaward management documents.

## **Administrative Infrastructure**

There are no specific funds allocated for support of the administrative infrastructure of TCU's. NASA assumes that all of the activities, support, and initiatives referred to in other parts of this report will contribute indirectly to this important area.

## FY 1998 PERFORMANCE

In FY 1998, NASA provided \$2.3 million to TCU's. Included in this amount was \$1.1 million in direct awards to eight different Tribal Colleges and \$1.2 million in awards to TCU's through third parties and the private sector. The direct funding to TCU's was comprised of four precollege outreach projects under the PACE Program, four education projects under the Partnership Awards, a high school/undergraduate research involvement project at Turtle Mountain Community College, and a pilot project at Bay Mills Community College to develop curriculum units in renewable energy resources.

Several significant barriers to TCU participation in NASA minority university programs were removed in FY 1998. Recognizing that TCU's generally do not have tenure systems for their faculty members, the PACE precollege outreach program was modified to remove a requirement that PI's hold tenure-track faculty positions. Although case-by-case exemptions had been given to TCU faculty in the past, the explicit removal of this requirement will now make the PACE program readily accessible to the faculty of TCU's. In addition, the eligibility requirements that appear in all NASA minority university solicitations were revised to explicitly name TCU's as an eligible class of institution. It is hoped that these modifications will encourage more TCU's to respond to NASA minority university solicitations.

A breakdown of the FY 1998 NASA awards to TCU's by institution and by type of award follows.

**TABLE 1:**

**FEDERAL AGENCY AWARDS TO  
TRIBAL COLLEGES AND UNIVERSITIES FY 1998**

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[TABLE1\\_composite.pdf](#)



**TABLE 3-A: SUMMARY OF TOTAL AGENCY AWARDS BY CATEGORY: FY 1998**1. **AGENCY:** National Aeronautics and Space Administration (NASA)2. **NAME, TITLE, AND SIGNATURE OF AGENCY REPRESENTATIVE:**

George E. Reese  
Associate Administrator for Equal Opportunity Programs

3. **TOTAL FUNDING FOR ALL INSTITUTIONS OF HIGHER EDUCATION IN FY1998:**

\$918,421,000

(Dollars in Thousands)

CATEGORY	TOTAL AWARDS TO IHE's	TOTAL AWARDS TO TCU's	% OF AWARDS TO TCU's
1. Research & Development	\$787,016		
2. Direct Institutional Subsidies			
3. Program Evaluation			
4. Training	\$39,760	\$1,115	2.8%
5. Facilities & Equipment			
6. Fellowships, Internships, Recruitment, IPA's			
7. Student Tuition Assistance, Scholarships, and Other Aid	\$3,715		
8. Third-Party Awards		\$1,126	
9. Private-Sector Involvement		\$65	
10. Administrative/Infrastructure			
11. Other	\$87,930		
<b>Total</b>	<b>\$918,421</b>	<b>\$2,306</b>	<b>0.3%</b>

Daniel S. Goldin, Administrator

Agency Head (Typed)

Date

Agency Head (Signature)



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## FY 1998 PROJECT NARRATIVES

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Narrative summaries of each of the FY 1998 NASA TCU projects appear below. Each narrative is identified by the institution conducting the project, the project title, the grant number, the year that the project was first funded, the Headquarters office from which the funding originated, the NASA Center or JPL from which the award was made, and the funds obligated in FY 1998. The abbreviations used for the NASA offices and Centers are defined in the overview of NASA's organization that appears on pages 3-4.

### Training and Technical Assistance

#### *Precollege Awards*

##### **Fort Belknap College, Preserving the Past and the Future**

NAG 5-4148 (1995)

OEOP/GSFC (HQ) FY 1998: \$100,000

"Preserving the Past and the Future," is the product of close collaboration between Fort Belknap College (FBC) and the Harlem School District. In its third and final year, the continued focus was to increase American Indian students' interest and participation and success in MSET fields. Activities included 5<sup>th</sup>- and 6<sup>th</sup>- grade student visits to FBC, participation in the Harlem School Science Fair, a 4-day outdoor education camp, and a mathematics/science day. Area teachers attended Geographic Information System/Global Positioning System (GIS/GPS) training in order to bring GIS/GPS projects into the classroom, as well as inservice, "Learning Enhancement Through Participation," and Full Option Science System (FOSS) training. This project completes its planned 3 years of funding under the PACE Program in FY 1998.

##### **Northwest Indian College, Seaquest Phase II**

NAGW-5143 (1996)

OEOP/GSFC (HQ) FY 1998: \$197,840

Seaquest is a program for Native Youth at Northwest Indian College. The primary goal of the program is to increase the number of Native American students who pursue 4-year degree programs in MSET. Seventy-six students participated in the program, including 21 students who participated in the Seaquest Peer Tutoring Program during the academic year and 55 students who participated in the 6-week summer Seaquest Program. In the summer of 1998, the Seaquest program offered three different modules: Investigating Marine Ecosystems, the Reinstatement of Humanness through Restitution of Nature, and Watershed Ecology and Alternative Energy Resources. Each module contained approximately 18 students and focused on a topic in science through an integration of lecture, computer applications, and reading and writing taught in the mornings. Each afternoon the students ventured into the field and reinforced the morning's lessons with hands-on activities. This program completes its planned 3 years of funding under the PACE Program in FY 1998.

**Oglala Lakota College, Scientific Knowledge for Indian Learning and Leadership (OLC/SKILL) NASA Honors Program**

NAG 5-7548 (1998)

OEOP/GSFC FY 1998: \$100,000

The purpose of the OLC/SKILL NASA Honors Program is to increase the secondary school retention and college entrance rate of American Indian students. The program's focus is to recruit and retain 4 groups of 25 students for a total of 100 students a year over a 4-year period spanning their 9th through 12th grades. A 4-week residential summer experience at the South Dakota School of Mines and Technology focuses on course work that provides skill building in problem solving and critical thinking. In addition, students are trained in research development. The curriculum emphasizes student understanding of NASA's Earth Science Program (formerly known as Mission to Planet Earth) in addition to college preparatory course work.

The program has proven to be successful with an average overall student retention rate of 71 percent. Student mathematics skills and GPA's have increased, and the students test higher than the national average for American Indians on the American College Testing (ACT). The students have sent a total of 15 separate experiments into space on 2 NASA Space Shuttle missions. From those experiences, the students have won regional and national awards at science fairs, presented their research at the Goddard Space Flight Center Small Payloads Symposium and have had their research published.

This project will continue under the PACE program through FY 2000.

**Southwestern Indian Polytechnic Institute (SIPI), Upward Bound/ NASA Project**

NAG 9-937 (1996)

OEOP/JSC FY 1998: \$100,000

Eighty high school students, including 79 Native Americans, participated in a 6-week summer residential enrichment program with academic year followup under the SIPI Upward Bound/NASA project. The project is achieving its goals of motivating and enabling precollege students to complete high school successfully, to enroll and complete a degree program at a postsecondary institution, and to choose an MSET career with the following outcomes:

- 60 students (75 percent) are enrolled in college prep MSET class(es).
- 46 of the 60 students (77 percent) enrolled earned a grade of "C" or better in college prep class(es).
- Of the 10 students who have ACT scores, 3 (30 percent) scored 18 or above.
- 25 percent of the student standardized composite scores are above the 39<sup>th</sup> percentile.
- Approximately 65 parents attended either the orientation workshop and/or the exhibition fair.
- The average GPA increased by 0.2 to 3.0.

This project continues under the PACE Program through FY 1999.

### **Turtle Mountain Community College, Recruitment and Retention of Indians in Science and Engineering (RISE)**

NAG 5-6088 (1993)

OEOP/GSFC (HQ) FY 1998: \$22,105

RISE is an undergraduate bridge and research enrichment program designed to increase the participation of Native American students on the Turtle Mountain Reservation in science, engineering, and mathematics. Twelve students participate in 10 intensive Sunday sessions at Turtle Mountain Community College on engineering materials, followed by 3 days at North Dakota State University, carrying out experiments based on what they have learned. This hands-on research experience at the University is intended to increase the students' confidence in their ability to conduct research and to make them comfortable in the setting of a 4-year university. The majority of past RISE participants have joined the preengineering program at Turtle Mountain Community College and intend to transfer to a 4-year university.

### ***Partnership Awards***

#### **Diné College, American Indian Network Information Center (AINIC)**

NAG 2-6012 (1997)

OEOP/ARC FY 1998: \$66,700

The AINIC provides a mechanism for expanding Native American utilization of the Internet in education, particularly supporting NASA's Earth Science Education Strategy. Taking advantage of the Internet capabilities developed for the Navajo Learning Network under the former Telecommunications Infrastructure Development Project, the AINIC offers an Internet training program to Diné College employees and students, as well as to community leaders from around the Navajo Nation. The project uses a "Train the Trainers" model, creating a network of highly trained teachers throughout the Navajo Nation who share expertise, both in accessing Internet resources and in developing curriculum materials for the Internet. Education projects emphasizing Earth Sciences will be implemented at 40 Navajo Nation schools. This project continues under the Partnership Awards through FY 1999.

#### **Diné College, Student Math & Science Career Initiatives**

NAG 9-968 (1997)

OEOP/JSC FY 1998: \$228,976

The objective of this project is to refine National Science Foundation (NSF), NASA, and Air Force Office of Scientific Research (AFOSR) programs at Diné College in an effort to increase retention and student success rates in MSET programs and to introduce Diné College students to the academic and research applications available via the Internet. The specific activities are (1) preparing 12th-grade high school students for college with a Summer Math/Science Enrichment Bridge Program; (2) bridging students into college coursework with a Science Honors Scholarship Program; and (3) providing active learning experiences for students and faculty through Summer Research Internships for

Earth and Space Science areas. These projects are coordinated through the Shiprock campus, with active collaboration with NASA's American Indian Science Technology Education Consortium (AISTEC), the AFOSR's Native American Earth and Space Academy (NAESA), and Johnson Space Center (JSC). This project continues under the Partnership Awards through FY 1999.

### **Oglala Lakota College, Project SMATH—Student Math and Health Sciences Initiative**

NAG 9-967 (1997)

OEOP/JSC FY 1998: \$20,000

Project SMATH is based on the premise that reservation-based students, when creatively introduced to concepts of science and math and health career opportunities, will begin to choose health careers. Through JSC's leadership, space medicine is used as the 'lure' by which students will be attracted to math- and science-related careers. Oglala Lakota College health career and science students are trained to work within the public schools for specific aspects of teaching space medicine to children. Activities, such as rocket launching and simulating a space station, with emphasis on human physiology and changes caused by space travel, are included. This project continues under the Partnership Awards through FY 1999.

### **Salish Kootenai College, NASA Aeronautical Ambassador Program for American Indians (NAAPAI)**

NAG 4-128 (1997)

OEOP/DFRC FY 1998: \$249,423

The Salish Kootenai College (SKC) Teachers Ambassador program is a partnership between SKC and Dryden Flight Research Center (DFRC) to develop preservice, inservice teaching activities that integrate historical American Indian knowledge and practices in navigation and weather with NASA's knowledge and technology in weather and navigation. From September 1997 through February of 1998, lessons developed the previous summer were pilot- tested by teachers participating in the program. In June 1998, the Elders and Teacher Ambassadors spent 2 weeks at DFRC working with DFRC personnel to improve their classroom materials and make them ready for pilot testing by other teachers. There were 150 standards-based, K-12 teaching lessons produced. The end goal is to have these lessons published and distributed nationally as a NASA educational resource. This project continues under the Partnership Awards through FY 1999.

## ***Other Training Activities***

### **Bay Mills Community College Renewable Energy Education Project**

OEOP/GRC FY 1998: \$30,000

Under the technical guidance of Glenn Research Center, the Grand Traverse Band (GTB) of Ottawa and Chippewa Indians and Bay Mills Community College (BMCC) developed curricula in renewable energy housing. A K-12 renewable

energy education component for GTB schools was completed, and a curriculum outline for three BMCC internet courses was brought nearly to completion. The BMCC courses are "Energy History and Sustainable Energy Development," "Energy Fundamentals and Concepts," and "Renewable and Sustainable Energy Systems."

The NASA grant was used to leverage three additional grants totaling \$70,000 from the State of Michigan. Two of the grants are for renewable energy demonstrations--a student travelling wind and solar educational demonstration, and a hybrid wind and solar photovoltaic system. The latter system is interconnected to the utility grid and to a GTB satellite office and community center for educational purposes and to supplement electric consumption. GTB has agreed to provide a test bed at this site for a hydrogen fuel cell related to the small wind and photovoltaic system. The third grant is to subsidize a planned 1,650-kilowatt commercial wind turbine to be installed by the GTB in the fall of 1999 in cooperation with two local electric utilities. This wind project will provide no less than 25 percent of the GTB annual electric consumption. GTB is developing a new electric, gas, thermal, and renewable energy public utility department to move towards control and operation of its own energy.

## **Fellowships, Internships, Recruitment, and IPA Arrangements**

### ***Administrator's Fellowship Program***

#### **Institute of American Indian Arts**

ARC FY 1998: In-Kind

An Ames Research Center employee, Ms. Diane Farrar, began an assignment under the NASA Administrator's Fellowship Program at the Institute of American Indian Arts. Her objectives were to conduct a comparative study of origin myths of Native people and state-of-the-art cosmology represented by NASA's exploration program; to combine the Native path and mainstream science approaches on origins and Earth Science with skills in writing, composition, and oral discussions; and to improve the participants' understanding, discussion, and application of critical thinking and writing skills, drawing particularly on origin and Earth Science themes. Her assignment continues through FY 2000.

## **Third-Party Awards**

### **National Action Council for Minorities in Engineering, Undergraduate Scholars Awards for Research**

OEOP/GRC FY 1998: \$24,000

The Undergraduate Scholars Awards for Research (USAR) program supported two D-Q University students in FY 1998.

**National Space Grant College and Fellowship Program (OHRE)**

OHRE FY 1998: \$101,500

Established by Congress in 1988 and implemented by NASA in 1989, the National Space Grant College and Fellowship Program (also known as Space Grant) contributes to the Nation's science enterprise by funding research, education, and public service projects through a national network of 52 university-based Space Grant consortia. Space Grant consortia assist TCU administrators, faculty, and students with resources such as grant-writing workshops, Internet access, use of research facilities, student tuition assistance, and curriculum and faculty development. The funding indicated here is that portion of Space Grant funds that was directed to Tribal Colleges.

**New Mexico Highlands University, American Indian Science and Technology Education Consortium (AISTEC)**

NGT 5-90069 (1994)

OEOP/GSFC (HQ) FY 1998: \$1,000,000

AISTEC is a consortium of four TCU's (Diné College, D-Q University, Haskell Indian Nations University, and Salish Kootenai College) and six major universities --(New Mexico Highlands University (lead), Arizona State University, Oklahoma State University, the South Dakota School of Mines and Technology, the University of New Mexico, and the University of Washington). Its mission is to develop and nurture American Indian students for careers in science, engineering, and mathematics, with a focus on the primary role of the Tribal Colleges.

In FY 1998, AISTEC efforts to improve SEM curricula at Tribal Colleges resulted in a 25-percent increase in SEM degree offerings at AISTEC Tribal Colleges, five new SEM distance learning courses for Tribal Colleges, and the development of a prototype set of SEM core courses that Tribal Colleges can use to fully articulate their curriculum to any Accreditation Board for Engineering and Technology-accredited engineering program.

**Private-Sector Involvement****Allied Technology Group, Inc.**

NASW-98021 (1998)

OEOP/GSFC (HQ) FY 1998: \$65,000

Peer review support activities provided by Allied Technology Group.

## FY 1999 PLAN

In FY 1999, NASA has established the following objectives for the support of TCU's:

- NASA will focus its attention on identifying and removing barriers to TCU participation in the areas designated by the White House Initiative Office on TCU's as the top priorities for Federal Agencies' support in the following areas of technology and of science and mathematics.
- Beginning with FY 1999, NASA will increase the amount of direct funding to TCU's by \$0.2 million per year, so that during the 5-year period from FY 1999 to FY 2003, the amount of direct funding will double over the FY 1998 baseline of \$1.1 million.

The first objective will be achieved through outreach activities designed to improve the relationships between TCU's and NASA, coupled with systematic modifications of existing NASA programs, with particular attention paid to the following activities:

- Activities designed to increase the familiarity of TCU's with NASA will be initiated, with the goal of improving TCU participation rates in NASA solicitations, student internships and fellowships, faculty development activities, teacher training and enhancement programs, and use of NASA educational materials.
- The AISTEC program will be modified to place greater emphasis on developing and improving TCU MSET courses and curricula, and a formal external program review will be conducted to seek ways to continually improve AISTEC's outcomes.
- NASA TCU programs will coordinate activities with NASA precollege outreach, teacher training and enhancement, curriculum development, and educational materials distribution programs to identify and remove barriers to the participation of TCU's and to improve the rates of TCU participation in these programs.
- NASA TCU programs will work with Minority University-Space Interdisciplinary Network (MU-SPIN) and other NASA computer and network technology programs to explore avenues for assisting the TCU's with their goal of bringing Internet resources to TCU campuses and to train TCU faculty, staff, and students in their usage.
- NASA TCU programs will explore the possibility of involving TCU's in NASA technology transfer efforts.

The second objective sets a baseline against which to measure future NASA support of TCU's. The actual projections, however, depend upon the commitments made by individual NASA Centers and JPL to involve TCU's in their activities. These projections are rather uncertain as they depend in large part upon the success rates of TCU proposals in competitive selections.

<b>Awards to TCU's (\$M)</b>	<b>FY 1998 Actual</b>	<b>FY 1999 Baseline Plan</b>	<b>FY 1999 Center Projections</b>
Direct Awards	\$1.1	\$1.3	\$1.5
Third-Party Awards	\$1.2	\$1.2	\$1.4
<b>Total Awards</b>	<b>\$2.3</b>	<b>\$2.5</b>	<b>\$2.9</b>



**TABLE 2-A:****FY 1999 ESTIMATED PROJECTED AGENCY AWARDS  
& LISTING OF PLANNED PROGRAMS AND ACTIVITIES, BY CATEGORY**

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INSERT TABLE

### TABLE 3-B: SUMMARY OF TOTAL AGENCY AWARDS BY CATEGORY: FY 1999

1. **AGENCY:** National Aeronautics and Space Administration (NASA)  
 2. **NAME, TITLE, AND SIGNATURE OF AGENCY REPRESENTATIVE:**

\_\_\_\_\_  
 George E. Reese  
 Associate Administrator for Equal Opportunity  
 Programs

3. **TOTAL FUNDING FOR ALL INSTITUTIONS OF HIGHER EDUCATION IN  
 FY1999:** \$918,421,000

(Dollars in Thousands)

CATEGORY	TOTAL AWARDS TO IHE's	TOTAL AWARDS TO TCU's	% OF AWARDS TO TCU's
1. Research & Development	\$787,016	\$120	0.02%
2. Direct Institutional Subsidies			
3. Program Evaluation			
4. Training	\$39,760	\$1,368	3.4%
5. Facilities & Equipment			
6. Fellowships, Internships, Recruitment, IPA's		\$3	
7. Student Tuition Assistance, Scholarships, and Other Aid	\$3,715		
8. Third-Party Awards		\$1,371	
9. Private-Sector Involvement		\$56	
10. Administrative/Infrastructure			
11. Other	\$87,930		
<b>Total</b>	<b>\$918,421</b>	<b>\$2,918</b>	<b>0.3%</b>

Daniel S. Goldin, Administrator  
 Agency Head (Typed)

\_\_\_\_\_  
 Agency Head (Signature)

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Date

## **FY 1999 PROJECT NARRATIVES**

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Narrative summaries of each of the NASA TCU projects projected for FY1999 appear below. Each narrative is identified by the institution conducting the project, the project title, the grant number, the year that the project was first funded, the Headquarters office from which the funding originated, the NASA Center (or JPL) from which the award was made, and the NASA obligations projected for FY 1999. The abbreviations used for the NASA offices and Centers are defined in the overview of NASA's organization that appears on pages 3-4.

### **Research and Development**

#### ***Principal Investigator (PI) Awards***

##### **Faculty Awards for Research**

OEOP/SSC Projected FY 1999: \$100,000

A significant barrier to TCU participation in the Faculty Awards for Research (FAR) program will be removed in FY 1999 when TCU's will be given a specific exemption from the requirement that FAR PI's must be tenured or tenure-track faculty members. It is hoped that technical assistance efforts undertaken by several of the NASA Centers (described under Training/Technical Assistance) will result in several new FAR awards to TCU's. The NASA Centers listed above have made specific plans to involve TCU's in the FAR Program in FY 1999.

#### ***Other Research and Development Activities***

##### **Kennedy Space Center, Research Support**

KSC Projected FY 1999: \$20,000

KSC will identify internal research and development funds that can be made available to TCU's for research grants or dedicated laboratory support.

## Training and Technical Assistance

### *Precollege Awards*

#### **Southwestern Indian Polytechnic Institute (SIPI), Upward Bound/ NASA Project**

NAG 9-937 (1996) OEOP/JSC Projected FY 1999: \$100,000

The SIPI Upward Bound/NASA Project will complete its 3 years of planned funding under the Precollege Awards for Excellence in Mathematics, Science, Engineering, and Technology (PACE) program in FY 1999.

#### **Oglala Lakota College, Scientific Knowledge for Indian Learning and Leadership (OLC/SKILL) NASA Honors Program**

NAG 5-7548 (1998) OEOP/GSFC FY 1999: \$100,000

The Oglala Lakota College, Scientific Knowledge for Indian Learning and Leadership (OLC/SKILL) NASA Honors Program Project will continue under the PACE program through FY 2000.

#### **Turtle Mountain Community College, Recruitment and Retention of Indians in Science and Engineering (RISE)**

NAG 5-6088 (1993) OEOP/GSFC(HQ) Projected FY 1999: \$30,000

The RISE project will continue in FY 1999.

### **New PACE Awards**

OEOP Projected FY 1999: \$0

In FY 1998, proposals were solicited for new Precollege Awards under the PACE program to be obligated in FY 1999 and continued through FY 2001. The number and distribution of awards to TCU's is determined by a competitive review of the proposals received. Although two proposals from TCU's were received, none were selected for funding.

### **New MASTAP Awards**

OEOP Projected FY 1999: \$0

In FY 1998, proposals were solicited for new teacher training and enhancement awards under the MASTAP program to be obligated in FY 1999 and continued through FY 2001. The number and distribution of awards to TCU's is determined by a competitive review of the proposals received. Only one proposal from a TCU was received, and it was not selected for funding.

## ***Partnership Awards***

### **Diné College, American Indian Network Information Center (AINIC)**

NAG 2-6012 (1997)                      OEOP/ARC Projected FY 1999: \$133,300

This project will complete its planned 2 years of funding in FY 1999.

### **Diné College, Student Math & Science Career Initiatives**

NAG 9-968 (1997)                      OEOP/JSC Projected FY 1999: \$164,116

This project will complete its planned 2 years of funding in FY 1999.

### **Oglala Lakota College, Project SMATH—Student Math & Health Sciences Initiative**

NAG 9-967 (1997)                      OEOP/JSC Projected FY 1999: \$100,000

This project will complete its planned 2 years of funding in FY 1999.

### **Salish Kootenai College NASA Aeronautical Ambassador Program for American Indians (NAAPAI)**

NAG 4-128 (1997)                      OEOP/DFRC Projected FY 1999: \$151,064

In FY 1999, some 170 teaching lessons, developed by the Teacher Ambassadors, will be piloted at various sites. A final draft of these lessons is expected in FY 1999. The project will complete its planned 2 years of funding in FY 1999.

## **New Partnership Awards**

OEOP/DFRC Projected FY 1999: \$100,000

OEOP/JSC Projected FY 1999: \$200,000

OEOP/SSC Projected FY 1999: \$200,000

In FY 1999, proposals will be solicited for new Partnership Awards to be obligated late in FY 1999 and continued in FY 2000. The number and distribution of awards to TCU's will be determined by a competitive review of the proposals received. The NASA Centers listed above have projected making Partnership Awards to TCU's in FY 1999.

## ***Technical Assistance Activities:***

### **Ames Research Center, D-Q University Pilot Program**

ARC Projected FY 1999: In-Kind

Ames Research Center plans to develop a pilot program with D-Q University, a Tribal College located 100 miles north of ARC. The program will explore the

most effective means of working with the University on an ongoing basis, including more effective proposal writing, student internships, training in the use of internet-based tools, and cultural exchanges.

### **Dryden Flight Research Center, Technical Assistance**

DFRC Projected FY 1999: In-Kind

DFRC plans to develop a pilot seminar/workshop that will assist in identifying and evaluating research and educational opportunities that may be available for DFRC and TCU's. The seminar/workshop will also identify additional TCU educational, research, and developmental programs for which DFRC can supply scientific and technical information and services.

### **Jet Propulsion Laboratory, TCU Site Visits**

JPL Projected FY 1999: In-Kind

JPL plans to conduct visits to TCU's to meet with the deans and faculty members of the Engineering and Science Departments. JPL will provide information concerning its Strategic Plan and ongoing research activities. This will help determine the level of interest in establishing long-term partnerships between JPL and these institutions.

### **Kennedy Space Center, Technical Assistance**

KSC Projected FY 1999: In-Kind

KSC plans to identify TCU's that are able to partner with KSC in implementing Center strategic goals and objectives, participate in NASA-sponsored workshops designed to increase the familiarity of TCU's with NASA, encourage program funding for support of TCU's by identifying talents and skills desired to accomplish programmatic goals, and involve TCU's in KSC technology transfer efforts through partnerships with other universities and local community ventures to form strong teams for the purpose of being more competitive in the applied R&D community.

## **Fellowships, Internships, Recruitment, and IPA Arrangements**

### ***Administrator's Fellowship Program***

#### **Institute of American Indian Arts**

ARC Projected FY 1999: In-Kind

The NASA Administrator's Fellow at IAIA will continue her term in FY 1999.

**Salish Kootenai College**

JSC Projected FY 1999: In-Kind

A new NASA Administrator's Fellow from NASA Johnson Space Center will begin a term at Salish Kootenai College.

***Other Fellowships, Internships, Recruitment, and IPA Arrangements*****Kennedy Space Center Student Internships and Co-ops**

KSC Projected FY 1999: \$3,000

KSC plans to involve TCU students in cooperative education and summer internship programs at KSC.

**Third-Party Awards****Goddard Space Flight Center, Minority University–Space Interdisciplinary Network (MU-SPIN)**

OEOP/GSFC Projected FY 1999: \$50,000

MU-SPIN is a comprehensive educational initiative that is focused on the transfer of advanced computer networking technologies to minority universities and their use for supporting multidisciplinary research. The MU-SPIN Program offers many valuable and needed services to the university community. These services include hands-on training to faculty and students in accessing resources available over the Internet; hands-on training to technical staff in local area and campus on network installation, management, and user support; technical sessions at annual conferences; and technical video lectures on network-related issues.

In FY 1999, MU-SPIN will conduct pilot projects and studies to determine ways MU-SPIN and NASA can most effectively support Tribal College computer network development needs.

**Goddard Space Flight Center, TCU Workshop in Earth Sciences**

EduTech, Ltd.

OEOP/GSFC Projected FY 1999: \$75,000

GSFC will host a workshop aimed at familiarizing TCU's and NASA/GSFC personnel with each other's capabilities and at developing areas of potential collaborations for TCU's on Earth Science activities at GSFC. At the workshop, TCU faculty and staff will come to GSFC for overview briefings and small group meetings in which areas of mutual interests will be explored. Sessions on proposal preparation, visits to the Educators' Resource Center (ERC), and social events will also be included. This workshop is the first in a series of workshops planned by NASA. Subsequent workshops to be held at other



NASA Centers will focus on specialty areas at that Center that are of particular interest to TCU's.

**Langley Research Center, Technical Assistance**

Hampton University                      OEOP/LaRC Projected FY 1999: \$75,000

LaRC plans to conduct a series of workshops such as the Small and Disadvantaged Business/University Opportunities Forum as a means to meet the goal of improving the TCU participation rate in LaRC's solicitations for grants, cooperative agreements, and contracts on a regular basis. LaRC will also conduct video teleconferences with TCU's having the capabilities to support such an activity as a means of informing students and faculty of NASA outreach programs including the exchange visitations between the TCU students and the LaRC scientists, engineers, and administrative professionals.

**National Action Council for Minorities in Engineering, Undergraduate Scholars Awards for Research**

OEOP/GRC FY Projected 1999: \$36,000

The Undergraduate Scholars Awards for Research (USAR) program plans to support three D-Q University students in FY 1999.

**National Space Grant College and Fellowship Program [OHRE]**

Various                                      OHRE Projected FY 1999: \$102,000

Space Grant consortia will assist TCU administrators, faculty, and students with resources such as grant-writing workshops, Internet access, use of research facilities, student tuition assistance, and curriculum and faculty development. The funding shown here is the portion of Space Grant funds projected to be directed to Tribal Colleges in FY 1999.

**New Mexico Highlands University, American Indian Science and Technology Education Consortium (AISTEC)**

NGT 5-90069 (1994)      OEOP/GSFC(HQ) Projected FY 1999: \$1,000,000

In FY 1999, AISTEC will move toward greater tribal involvement within AISTEC and toward the further development of alternative sources of income to support the expansion of AISTEC activities. AISTEC will solicit proposals for small projects from the entire Tribal College community. Based on reviews by a panel led by Salish Kootenai College, some of these projects will be selected for inclusion in the FY 2000 AISTEC program.

**New Mexico Highlands University, Technology Transfer and Commercialization Office**

JSC Projected FY 1999: \$33,333

New Mexico Highlands University will establish an office dedicated to assisting minority universities, including TCU's, to develop technology transfer and commercialization projects that might serve as a source of economic development for their communities. The funding shown is the portion of the award directed towards TCU's.

**Private-Sector Involvement****Allied Technology Group, Inc.**

NASW-98021 (1998) OEOP/GSFC (HQ) Projected FY 1999: \$56,000

Peer review support activities provided by Allied Technology Group, Inc.

## FY 2000 PLAN

In FY 2000, NASA plans to continue implementing the objectives for the support of TCU's established in FY 1999:

- NASA will focus its attention on identifying and removing barriers to TCU participation in the areas designated by the White House Initiative Office on TCU's as the top priorities for Federal Agencies' support in technology and in science and mathematics.
- Through FY 2003, NASA will increase the amount of direct funding to TCU's by \$0.2 million per year, so that during the 5-year period from FY 1999 to FY 2003, the amount of direct funding will double over the FY 1998 baseline of \$1.1 million.

The priority activities described for FY 1999 will be continued in FY 2000:

- Outreach activities designed to increase the familiarity of TCU's with NASA.
- AISTEC program continuation or modification in response to results of the FY 1999 external review.
- Precollege education and teacher training activities.
- Computer and network technology support.
- Technology transfer.

The NASA baseline funding plan shows the continued \$0.2 million annual increase in direct funding to TCU's as set in the NASA objectives for TCU's. The NASA Centers and JPL projections for FY 2000 remain ahead of the baseline plan and level with the FY 1999 Center/JPL projections. Again, these projections are rather uncertain as they depend in large part upon the success rates of TCU proposals in competitive selections.

<b>Awards to TCU's (\$M)</b>	<b>FY 1998 Actual</b>	<b>FY 1999 Baseline Plan</b>	<b>FY 1999 Center Projections</b>	<b>FY 2000 Baseline Plan</b>	<b>FY 2000 Center Projections</b>
Direct Awards	\$1.1	\$1.3	\$1.5	\$1.5	\$1.5
Third-Party Awards	\$1.2	\$1.2	\$1.4	\$1.2	\$1.4
<b>Total Awards</b>	<b>\$2.3</b>	<b>\$2.5</b>	<b>\$2.9</b>	<b>\$2.7</b>	<b>\$2.9</b>

**TABLE 2-B:**

**FY 2000 ESTIMATED PROJECTED AGENCY AWARDS  
& LISTING OF PLANNED PROGRAMS AND ACTIVITIES, BY CATEGORY**

[TCU REPORT TABLE2B.PDF](#)

### TABLE 3-C: SUMMARY OF TOTAL AGENCY AWARDS BY CATEGORY: FY 2000

1. AGENCY: National Aeronautics and Space Administration (NASA)

2. NAME, TITLE, AND SIGNATURE OF AGENCY REPRESENTATIVE:

\_\_\_\_\_  
George E. Reese  
Associate Administrator for Equal Opportunity  
Programs

3. TOTAL FUNDING FOR ALL INSTITUTIONS OF HIGHER EDUCATION IN FY2000:

\$918,421,000

(Dollars in Thousands)

CATEGORY	TOTAL AWARDS TO IHEs	TOTAL AWARDS TO TCUs	% OF AWARDS TO TCUs
1. Research & Development	\$787,016	\$350	0.04%
2. Direct Institutional Subsidies			
3. Program Evaluation			
4. Training	\$39,760	\$950	2.4%
5. Facilities & Equipment			
6. Fellowships, Internships, Recruitment, IPAs		\$170	
7. Student Tuition Assistance, Scholarships, and Other Aid	\$3,715		
8. Third-Party Awards		\$1,367	
9. Private-Sector Involvement		\$88	
10. Administrative/Infrastructure			
11. Other	\$87,930		
<b>Total</b>	<b>\$918,421</b>	<b>\$2,925</b>	<b>0.3%</b>

Daniel S. Goldin, Administrator  
Agency Head (Typed)

\_\_\_\_\_  
Agency Head (Signature)

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Date

## **FY 2000 PROJECT NARRATIVES**

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Narrative summaries of each of the NASA TCU projects planned for FY 2000 appear below. Each narrative is identified by the institution conducting the project, the project title, the grant number, the year that the project was first funded, the Headquarters office from which the funding originated, the Center or JPL from which the award was made, and the NASA obligations planned for FY 2000. The abbreviations used for the NASA offices and Centers are defined in the overview of NASA's organization that appears on pages 3-4.

### **Research and Development**

#### ***Principal Investigator (PI) Awards***

##### **Faculty Awards for Research**

OEOP/DFRC Planned FY 2000: \$100,000

OEOP/JSC Planned FY 2000: \$100,000

OEOP/SSC Planned FY 2000: \$100,000

The NASA Centers listed above have made specific plans to involve TCU's in the FAR Program in FY 2000.

#### ***Other Research and Development Activities***

##### **Kennedy Space Center, Research Support**

KSC Planned FY 2000: \$40,000

KSC plans to identify internal research and development funds that can be made available to TCU's for research grants or dedicated laboratory support.

##### **Marshall Space Flight Center, Research Support**

MFSC Planned FY 2000: \$10,000

MSFC plans to make funds available to TCU's for research grants.

## Training and Technical Assistance

### *Precollege Awards*

#### **Oglala Lakota College, Scientific Knowledge for Indian Learning and Leadership (OLC/SKILL) NASA Honors Program**

NAG 5-7548 (1998)

OEOP/GSFC FY 2000: \$100,000

The Oglala Lakota College, Scientific Knowledge for Indian Learning and Leadership (OLC/SKILL) NASA Honors Program Project will complete its planned funding under the PACE program in FY 2000.

#### **New PACE Awards**

OEOP/JSC Planned FY 2000: \$100,000

OEOP Planned FY 2000: \$100,000

In FY 1999, proposals will be solicited for new Precollege Awards under the PACE program to be obligated in FY 2000 and continued through FY 2002. The number and distribution of awards to TCU's is determined by a competitive review of the proposals received. For planning purposes, OEOP is assuming that two new TCU projects will be selected for funding in FY 2000.

#### **New MASTAP Awards**

OEOP/JSC Planned FY 2000: \$100,000

In FY 1999, proposals will be solicited for new Precollege Awards under the MASTAP program to be obligated in FY 2000 and continued through FY 2002. The number and distribution of awards to TCU's is determined by a competitive review of the proposals received. For planning purposes, OEOP is assuming that one new TCU project will be selected for funding in FY 2000.

### *Partnership Awards*

#### **New Partnership Awards**

OEOP/DFRC Projected FY 2000: \$100,000

OEOP/JSC Projected FY 2000: \$200,000

OEOP/SSC Projected FY 2000: \$200,000

The new Partnership Awards that were projected to receive their first funds in FY 1999 will be continued through FY 2000.



***Technical Assistance Activities:*****Ames Research Center, D-Q University Pilot Program**

ARC Projected FY 2000: In-Kind

Ames Research Center plans to continue its pilot program with D-Q University in FY 2000.

**Dryden Flight Research Center, Technical Assistance**

DFRC Projected FY 2000: In-Kind

DFRC plans to continue its technical assistance activities with TCU's in FY 2000.

**Jet Propulsion Laboratory, TCU Site Visits**

JPL Planned FY 2000: In-Kind

JPL plans to continue to conduct visits to TCU's in FY 2000.

**Jet Propulsion Laboratory, Applied Technology Classroom**

JPL Planned FY 2000: \$50,000

JPL educational specialists will encourage TCU representatives to establish Teacher Training Centers and to establish "Applied Technology Classrooms" at strategic locations, which could then be used to provide teacher training for the local population. JPL will provide resources to assist with achieving this goal.

**Kennedy Space Center, Technical Assistance**

KSC Planned FY 2000: In-Kind

KSC plans to continue its technical assistance activities with TCU's.

**Marshall Space Flight Center, Technical Assistance**

MSFC Planned FY 2000: In-Kind

MSFC plans to develop workshops that will allow TCU administrators and PI's the opportunity to visit MSFC and become acquainted with the Center's roles and missions.

## **Fellowships, Internships, Recruitment, and IPA Arrangements**

### ***Administrator's Fellowship Program***

#### **Institute of American Indian Arts (IAIA)**

ARC Planned FY 2000: In-Kind

The NASA Administrator's Fellow at IAIA will complete her term in FY 2000.

#### **Salish Kootenai College**

JSC Planned FY 2000: In-Kind

The NASA Administrator's Fellow at Salish Kootenai College will complete his term in FY 2000.

### ***Other Fellowships, Internships, Recruitment, and IPA Arrangements***

#### **Jet Propulsion Laboratory Training Programs**

JPL Planned FY 2000: \$150,000

JPL plans to encourage TCU faculty members and students to participate in activities such as the Alliance for Learning and Vision for Underrepresented Americans (ALVA) program, the American Society for Engineering and Education (ASEE) Summer Faculty Program, and the Minority Summer Intern Program. Teachers from TCU's will be encouraged to attend educational workshops designed to assist teachers with acquiring a new knowledge base, teaching techniques and experiences from interactions with JPL engineers, scientists, and educational specialists.

JPL educational specialists will encourage TCU representatives to establish Teacher Training Centers and to establish "Applied Technology Classrooms" at strategic locations, which could then be used to provide teacher training for the local population. JPL will provide resources to assist with achieving this goal.

#### **Marshall Space Flight Center**

MSFC Planned FY 2000: \$10,000

MSFC plans to support educational outreach at TCU's in FY 2000.

#### **Kennedy Space Center Training Programs**

KSC Planned FY 2000: \$10,000

KSC plans to involve TCU students in cooperative education and summer internship programs at KSC.

## ***Summer Internships***

### **Marshall Space Flight Center**

MSFC Planned FY 2000: \$10,000

MSFC will support a TCU student in its summer internship program.

## **Third-Party Awards**

### **The College Fund/UNCF (UNCF), Curriculum Improvement Partnership Award (CIPA) Program**

OEOP Projected FY 2000: \$200,000

UNCF will initiate the Curriculum Improvement Partnership Award (CIPA) Program to benefit NASA, Minority-Serving Institutions (MI), and the Nation by providing grant support to improve undergraduate curricula in science, mathematics, engineering, and technology. The basic goal of the CIPA Program is to strengthen the curricula of selected 2-year and 4-year MI's in academic fields and technical programs directly related to NASA's mission. The funding shown is the portion projected for TCU's.

### **National Action Council for Minorities in Engineering, Undergraduate Scholars Awards for Research**

OEOP/GRC Planned FY 2000: \$48,000

The Undergraduate Scholars Awards for Research (USAR) program plans to support four D-Q University students in FY 1999.

### **National Space Grant College and Fellowship Program [OHRE]**

OHRE Planned FY 2000: \$102,000

Space Grant consortia will assist TCU administrators, faculty, and students with resources such as grant-writing workshops, Internet access, use of research facilities, student tuition assistance, and curriculum and faculty development. The funding shown here is the portion of Space Grant funds planned to be directed to Tribal Colleges.

### **New Mexico Highlands University, American Indian Science and Technology Education Consortium (AISTEC)**

NGT 5-90069 (1994) OEOP/GSFC(HQ) Planned FY 2000: \$1,000,000

AISTEC will continue its activities in FY 2000.

**New Mexico Highlands University, Technology Transfer and Commercialization Office**

JSC Planned FY 2000: \$16,667

New Mexico Highlands University will continue to develop technology transfer and commercialization projects at minority universities, including TCU's. The funding shown is the portion of the award directed towards TCU's.

**Private-Sector Involvement****Allied Technology Group, Inc.**

NASW-98021 (1998) OEOP/GSFC(HQ) Planned FY 2000: \$88,000

Peer review support activities provided by Allied Technology Group.

## APPENDIX: OTHER NATIVE AMERICAN EDUCATION ACTIVITIES

In addition to the TCU activities in this Report and Plan, NASA supports a number of projects that support the MSET education of Native American students through institutions that are not TCU's. NASA provided \$0.3 million for such activities in FY 1998, and projects providing \$0.4 million for them in FY 1999 and \$0.3 million in FY 2000.

### FY 1998 PERFORMANCE

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#### American Indian Science and Engineering Society (AISES) National Conference

OHRE FY 1998: \$30,000

NASA was a major sponsor of the 1997 AISES National Conference in Houston, Texas, and also provided funding for AISES scholarships. NASA exhibits spanned two quad booths at the entrance to the exhibit hall. Astronaut John Herrington (Chickasaw Tribe), NASA's first Native American astronaut, enthralled the AISES students with a luncheon address in which he traced his life story, signed autographs, and spoke personally with almost every one of the students at the conference. Approximately 25 NASA employees were present, offering educational and recruiting materials and presenting a workshop on internship and fellowship opportunities. Under NASA sponsorship, the Teacher Education Program included a 1-day workshop focused on reconciling traditional beliefs with science and technology, a half-day workshop on NASA's Earth Science, and a half-day workshop on curriculum and educational technology development. NASA's JSC offered special tours for the AISES students.

#### The College Of Santa Fe, Mobile Science Project

NAG 9-992 (1998)

OEOP/JSC FY 1998: \$65,000

JSC FY 1998: \$65,000

The Mobile Science Project provides educational outreach to rural Native American K-12 students, as well as to their teachers and parents, focusing upon bolstering MSET education and curricula. The target population is over 4,000 K-12 students at 19 pueblo communities in North Central New Mexico. The Project has delivered highly interactive informal workshops during the school year, Summer Day Camps, and a live-in Summer Camp at The College of Santa Fe, to over 2,000 students and hundreds of teachers and parents in the target population since 1996.

**Hampton University, American Indian Educational Opportunities Program (AIEOP)**

NAG 1-1185

OEOP/LaRC FY 1998: \$0

The American Indian Educational Opportunities Program (AIEOP) at Hampton University, provides scholarship support to eligible students from federally or State-recognized tribal groups accepted for admission at the undergraduate or graduate level at Hampton. The program is directed by Dr. Paulette F. Molin, a member of the Minnesota Chippewa Tribe, and is located in the newly renovated museum on campus. The AIEOP works to enhance Native American participation at the University through a variety of means, including recruitment and retention of students, outreach activities, and sponsorship of educational programs. During academic year September 1997-98, 12 American Indian students were enrolled at Hampton University through the program. Four of the 12 students enrolled in graduate-level programs, while the remainder pursued baccalaureate degrees.

This project was active in FY 1998, but renewal funding was not obligated until after the end of the fiscal year.

**Northern Arizona University, Native American Science and Engineering Program (Sacred Mountain Scholars)**

NGT-90028 (1990)

OEOP/GSFC (HQ) FY 1998: \$50,000

Operating within the Multicultural Engineering Program at Northern Arizona University, the Sacred Mountain Scholars program provides scholarships, summer internships, mentoring, and tutoring to Native American students at Northern Arizona University. The last year of funding for this program was FY 1998.

**South Dakota School of Mines and Technology, Scientific Knowledge for Indian Learning and Leadership (SKILL)**

NAG 5-2950 (1995)

OEOP/GSFC FY 1998: \$100,000

The SKILL/NASA Honors Program offers a 4-week summer residential program for American Indian students entering 9<sup>th</sup>-12th grades. Fourth-year students complete a total of 589 hours of program instruction and showed an overall increase in their GPA. Accomplishments from these students have included 15 separate experiments flown on two Shuttle missions and numerous regional and national science fair awards. This year's summer program included 65 students who participated in a variety of subjects, as well as community and physical endeavors. Students worked on a self-paced mathematics program based on the Ohio Math Project. A communications class, centered on improving its writing, grammar, and speaking skills, was also part of the curriculum as well as a computer class in which students created their own web pages. Science classes included physics, geology, astronomy, Earth systems science, and a research/science fair project. Also included was a Native American culture class in which students studied Native American history in the areas of mathematics and science. Twelve students entering their fourth year of high

school enrolled in college classes of mathematics. Several of the students took two to three classes over the summer. Their classes included Algebra I, II, and III, Trigonometry I and II, and Calculus II. Their grades were 19 A's, 2 B's, 2 C's, 3 I's and 2 NC's. Previous years have shown a retention of at least 80 percent, and surveys given indicated a probable return for 1999 of at least that many.

### **University of Idaho, Eagles in Space Program**

NAG 4-116 (1997)

ARC FY 1998: \$14,214

DFRC continues to be involved in the Eagles in Space Program. This is a grant program funded by DFRC. The Upward Bound program at the University of Idaho has teamed with NASA to develop a resource base which includes a network of Native American professionals in the field of aeronautics who will interact with Native American students from the Nez Perce and Coeur d' Alene reservations. This grant will continue until July 1999.

## **FY 1999 PLAN**

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### **American Indian Science and Engineering Society (AISES) National Conference**

OEOP Projected FY 1999: \$30,000

NASA will be a major sponsor of the 1998 AISES National Conference in Denver, Colorado. NASA exhibits will again span two quad booths at the entrance to the exhibit hall, and NASA workshops on Space Science, Earth Science, and careers in engineering are planned. Astronaut John Herrington will be a featured speaker at the banquet.

### **Ames Research Center, Education Workshop for American Indians and Teachers of American Indians**

ARC Projected FY 1999: \$150,000

Ames Research Center will continue to conduct the NASA Education Workshop for American Indians and Teachers of American Indians (NEW-AI). Now in its second year, this program reaches 25 teachers each summer. The program improves the ability of teachers to teach science in a culturally relevant context. This program strongly supports NASA's work plan objective to increase science proficiency of American Indian middle school, high school, and college students.

### **Hampton University, American Indian Educational Opportunities Program (AIEOP)**

NAG 1-1185

OEOP/LaRC Planned FY 1999: \$218,000

The American Indian Educational Opportunities Program (AIEOP) at Hampton University will continue in FY 1999. The funding shown here includes the anticipation of obligation of funds delayed from FY 1998.

**FY 2000 PLAN**

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**American Indian Science and Engineering Society (AISES) National Conference**

OEOP Planned FY 2000: \$8,000

Plans for NASA's participation in the 1999 AISES Conference in Minneapolis, Minnesota are being developed.

**Ames Research Center, Education Workshop for American Indians and Teachers of American Indians**

ARC Planned FY 2000: \$150,000

Ames Research Center will continue to conduct the NASA Education Workshop for American Indians and Teachers of American Indians (NEW-AI).

**Hampton University, American Indian Educational Opportunities Program (AIEOP)**

NAG 1-1185

OEOP/LaRC Projected FY 2000: \$109,000

The American Indian Educational Opportunities Program (AIEOP) at Hampton University will continue in FY 2000.